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3400 Forest Pest Management October 13, 1981

Functional Assistance Trip - Barlow Ranger District

Forest Supervisor, Mt. Hood NF

On October 2, Gregory M. Filip and James S. Hadfield, Pathologists at the Regional Office, visited the Barlow Ranger District on the Mt. Hood National Forest. Purpose of the visit was to examine a number of proposed timber sale areas for several potentially damaging diseases. They were accompanied by Keith Fagerberg, District Silviculturist; Denise Zemer, Area Planner; and Marla Gillham, Silvicultural Assistant.

The first area that they visited was Unit 1 of the proposed Buggate Sale, about 40 acres. The stand was composed of mature grand and Douglas-fir with some western larch and ponderosa pine. The grand and Douglas-fir were experiencing heavy mortality for at least the last 10-20 years due to laminated root rot, caused by *Phellinus weirii* and annosus root rot, caused by *Fomes annosus*. These root diseases are potentially quite serious, especially laminated root rot, since they can persist on the site for several decades following stand removal. Infected stumps can infect susceptible regeneration and carry the disease into the next rotation which may sustain even more damage than the previous stand. Many of the dead trees were also infested with fir engravers, *Scolytus ventralis*, which commonly attack trees infected with root disease. Some of the Douglas-fir also had serious infections caused by Douglas-fir dwarf mistletoe, *Arceuthobium douglasii*. All other units appear similarly affected as Unit 1, according to the District.

The District plans to clearcut all units in the Buggate Sale and plant ponderosa pine. This is one of the best practical solutions to reduce future damage to root disease on this site. Ponderosa pine is classified as resistant to laminated root rot; the species can become infected, but little or no tree mortality will occur over the rotation. The fungus will gradually die out of the site.

Another species that may be considered for planting is western larch which is classified as intermediately susceptible to laminated root rot. Larch is more resistant than Douglas-fir and grand fir but less resistant than ponderosa pine to laminated root rot. Larch planted on heavily infested sites will sustain less mortality due to root rot than grand or Douglas-fir and will usually have only a butt rot. However, the fungus may persist on the site into the next rotation.

Ponderosa pine is also resistant to the strain of *Fomes annosus* on grand fir. Larch is also more resistant to *F. annosus* than grand fir.

A second alternative that may be considered on other similarly infested sites is removal of infected stumps following stand removal, especially if Douglas-fir or grand fir are desired in the next rotation. Excavation of infected stumps with heavy machinery will remove about 90 percent of the root material from the ground and prevent spread to susceptible regeneration. Stump removal is costly, $200 to $1,000 per acre, depending on workability of soils and number and size of infected stumps. Soil compaction and disturbance due to heavy machinery may cause adverse growth impacts in the next rotation and should be considered carefully if stump removal is to be used.

The second area they visited was the proposed Frailey Sale of about 40 acres. A Douglas-fir stand infected by Douglas-fir dwarf mistletoe was examined. The stand was composed of pole and sawtimber size trees. A few grand fir and ponderosa pines were also present. The stand had been partially cut several years ago. Dwarf mistletoe was evident in many of the Douglas-firs, especially those that had their crowns exposed by the previous cutting.

It appeared the District could do a commercial thinning in the stand. All Douglas-firs with infection in more than one third of their crowns should be removed. Grand firs and ponderosa pines free of serious defects should be retained. The District plans to regenerate the stand 20 years after the thinning. This treatment should be effective. Trees with mistletoe presently in the bottom one third of their crowns will grow at reasonable rates for at least 10 years. However, the mistletoe brooms in these trees will enlarge and start to significantly affect growth 10 to 15 years after release. It is unlikely that many of the presently lightly infected trees will die or experience much top-killing within 20 years following thinning. After 20 years, we would expect the presently infected trees to suffer serious growth retardation, top-killing, and mortality.

If the stand at Frailey contained trees requiring more than 20 years to grow to merchantable size, we would not recommend a thinning. In such cases, we would recommend the stand either be kept dense to reduce mistletoe vigor and be thinned 15 to 20 years before being regenerated or that it be regenerated now. Douglas-firs infected by mistletoe when they are small (less than 4 inches DBH) are poor risk crop trees, especially in thinned stands.

The last area they visited was Unit 5 of the proposed Eight-Day Sale. The stand was composed of old-growth grand fir with second-growth subalpine fir, Engelmann spruce, and lodgepole pine. Some of the stand was experiencing windthrow which appeared to be due to shallow soils and root and butt rot, possibly caused by *Armillaria mellea*. Much of the grand fir was heavily infected with the Indian paint fungus, *Echinodontium tinctorium*. This is the most damaging heartrot of grand and white fir in the Region.

The District plans to clearcut the unit. This is the best treatment to reduce the losses due to decay in this stand. It is recommended that no advanced grand fir regeneration be retained since they are probably already infected with Indian paint fungus. No serious damage caused by root diseases was observed in the stand, so just about any species can be planted or regenerated naturally on the site. It is imperative that the future stand not be allowed to stagnate since infection by *E. tinctorium* is highly correlated with tree suppression.

A number of other proposed sale areas not examined on this visit will be examined at a future date. If FPM can be of further assistance, please contact us.

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